

KMS Color Management Workshop Report

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XDC 2023 - A Coruña - Spain



Participants

José Exposito (Red Hat)

Michel Danzer (Red Hat)

Niels De Graef (Red Hat)

Harry Wentland (AMD)

Pekka Paalanen (Collabora)

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Vikas Korjani (AMD)

Shashank Sharma (AMD)

Jonas Ådahl (Red Hat)

Uday Kiran (AMD)

Da Xue (Libre Computer)

Hector Martin (Asahi Linux)

Sasha McIntosh (Google)

Daniel Stone (Collabora)

Victoria Brekenfeld (System76)

Simon Ser (SourceHut)

Michał Sawicz (Ubuntu/Canonical)

Melissa Wen (Igalia)

Carlos Soriano (Red Hat)

Alex Goins (NVIDIA)

Jeremy Selan (Valve)

Joshua Ashton (Valve)

Xaver Hugl (KDE/BlueSystems)

Dmitry Baryshkov (Linaro)

Abhinav Kumar (Qualcomm)

Marijn Suijten (Traverse Research)



Shell & Display Next Hackfest

- **Brno - CZ, 24-26 April inclusive**

<https://wiki.gnome.org/Hackfests/ShellDisplayNext2023>

Agreements:

- **Short-term plan:** [AMD driver-specific color properties](#)
- **Long-term plan:** KMS Generic API
 - Prescriptive: A list of available hardware blocks
 - Testing: writeback, VKMS, etc.
 - New property: color_pipeline
 - New KMS object type: COLOROP



Hackfest Follow-Up

[RFC] Plane color pipeline KMS uAPI - **Simon Ser**

[RFC 00/33] Add Support for Plane Color Pipeline - **Uma Shankar**

[RFC PATCH 00/10] Color Pipeline API w/ VKMS - **Harry Wentland**

[PATCH v4 00/32] drm/amd/display: add AMD driver-specific properties for color mgmt - **Melissa Wen**



Discussions

- **Conflicts between existing pre-blending and post-blending color properties**
- **New generic API implementation on VKMS: lessons learned**
- **Better testing with a writeback connector**
- **Variety of capabilities for color transformations and NVIDIA color singularities**
- **Latency issue when updating 3D LUTs**
 - **Async LUT update**
 - **Benchmarks**
 - **Looking for a general uAPI solution**



Discussions

- **Precision guarantees**
 - **Hardware specific implementations: segmented LUT**
 - **Bit-by-bit equality is a lost cause**
 - **Evaluate it throughout each iteration**
- **Very simple API first and a more complex later**
- **Userspace needs to always be able to fallback to shaders: no implicit assumptions**



Next steps

Reference/start point: "[\[RFC PATCH 00/10\] Color Pipeline API w/ VKMS](#) - Harry Wentland"

- Focus on having more vendors build upon that ^^
- Check 3D LUT performance
- Don't go too deep with VKMS



2024 Display Hackfest

Igalia HQ - A Coruña, Spain - April/May 2024

Melissa Wen :)

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